

ADDENDUM TO THE FACT SHEET  
FOR STATE WASTE DISCHARGE  
PERMIT NO. ST 8062

I. GENERAL INFORMATION

Facility: Wastewater Treatment Facility  
City of George  
P O. Box 5277  
George, WA 98824

II. APPLICATION REVIEW

An application for permit reissuance was submitted to the Department of Ecology (Department) on January 30, 2006, and accepted by the Department on February 02, 2006. The scope and manner of any review of an application for replacement of permit by the Department shall be sufficiently detailed as to insure the following:

- That the permittee is in substantial compliance with all of the terms, conditions, requirements and schedules of compliance of the expired permit;
- That the Department has up-to date information on the permittee's production levels; permittee's waste treatment practices; nature, content, and frequencies of permittee's discharge; either pursuant to the submission of new forms and applications or pursuant to monitoring records and reports resubmitted to the Department by the permittee; and
- That the discharge is consistent with applicable effluent standards and limitations, water quality standards, and other legally applicable requirements listed in WAC 173-220-130.

The application for the City of George was reviewed and indicates that no changes in the treatment characteristics of the effluent process or volume of wastewater have occurred.

III. PERMIT REAUTHORIZATION

This fact sheet addendum accompanies the draft permit, which is to be reauthorized to City of George for the discharge of wastewater to protect and augment ground water supply. The previous fact sheet is also part of this administrative record and explains the basis for the discharge limitations and conditions of the reauthorized permit.

The existing permit requirements, including discharge limitations and monitoring, do not need to be changed to protect the receiving water quality. The previous fact sheet addressed conditions and issues at the facility at the time when the previous permit was issued, and statements made reflected the status in 2001. Since the issuance of the current permit, the Department has not received any information which indicates that environmental impacts from the discharge that were not evaluated at the time of the last permit issuance is persuasive enough to undertake a complete renewal of the permit. The reauthorized permit is virtually identical to the previous permit issued on March 31, 2001.

The discharge limits and conditions in effect at the time of expiration of the previous permit are carried over unchanged to this reauthorized permit. Assessment of compliance and inspections of the facility during the previous permit term indicate that the facility should not be placed on a high priority for permit renewal. The Department assigns a high priority for permit renewals in

situations where water quality would materially benefit from a more stringent permit during the next five-year cycle.

The permit reauthorization process, in concert with the routine renewal of high priority permits, allows the Department to reissue permits in a timely manner and minimize the number of active permits that have passed expiration dates. A system of ranking the relative significance of the environmental benefit to be gained by renewing a permit rather than reauthorizing a permit is followed during the Department's annual permit planning process. Each permit that is due for reissuance is assessed and compared with other permits that are also due for reissuance. The public is notified and input is sought after the initial draft ranking has tentatively established which permits are likely to be completely renewed and which are likely to be reauthorized. All relevant comments and suggestions are considered before a final decision is made regarding the type of reissuance for each permit.

Submittal requirements from the previous permit that were completed and submitted and do not require additional or continued assessment were removed from this permit. The submittal dates for the other standard compliance and submittal requirements that have been carried over from the past permit into this reauthorized permit have been adjusted to the proposed permit schedule. The Department considered these submittals necessary in the previous permit and no information has come forward to cause a reconsideration of the submittal requirement. The recently updated permit shell for water reclamation and reuse was incorporated in this permit reauthorization.

The only minor change was the clarification and revision of the calculation for the lbs/acre of total nitrogen applied to the sprayfield on a monthly basis. Footnote (1) of permit condition S2 B Sprayfield Nitrogen Loading was revised as shown below:

<sup>1</sup> The maximum monthly lbs/acre of total nitrogen is calculated as: [avg Total Nitrogen effluent concentration for the month (mg/L)] x [0.567 (conversion factor)] x [total monthly effluent flow (million gallons)]; For example: [20 mg/L] x [0.567] x [5.60 million gallons] = 63.5 lbs/acre/month

The previous calculation only calculated the pounds of total nitrogen being applied to the entire sprayfield. This number is divided by the number of acres irrigated to get the final lbs/acre for the month in question. The conversion factor was rounded up to the nearest [ $1 \times 10^{-5}$ ]. This rounding reduces the maximum amount of effluent that is allowed on the sprayfield.

The existing monthly lbs/day was calculated as: [avg. TN effluent concentration for the month (mg/L)] x [ $1 \times 10^{-5}$  (conversion factor)] x [total monthly effluent flow (gallons)]; For example: [20.0 mg/L] x [ $1 \times 10^{-5}$ ] x [5,600,000 gallons] = 1120 lbs/month. This number is divided by the number of acres irrigated to get the final lbs/acre. (1120 lbs/14.7 acres = 76.2 lbs/acre/month).

The existing calculation shows that more lbs/acre of total nitrogen is applied to the irrigation land (76.2 lbs/ac) then what is actually being applied (63.5 lbs/ac) with the more accurate equation.

#### IV. RECOMMENDATION FOR PERMIT ISSUANCE

The Department proposes that this permit be issued for five years.

## **APPENDIX A – PUBLIC INVOLVEMENT INFORMATION**

The Department has determined to reauthorize a discharge permit to the applicant listed on page 1 of this fact sheet addendum. The permit contains conditions and effluent limitations that are described in the fact sheet.

Public notice of application was published on February 10, and February 17, 2006, in *the Columbia Basin Herald* to inform the public that an application had been submitted and to invite comment on the reauthorization of this permit.

Water Quality Permit Coordinator  
Department of Ecology  
Eastern Regional Office  
4601 North Monroe Street  
Spokane, WA 99205-1295

Further information may be obtained from the Department by telephone at (509) 329-3537 or by writing to the address listed above.



## ADDENDUM TO THE FACT SHEET FOR PERMIT NUMBER ST 8062

Applicant: City of George  
P.O. Box 5277  
George, WA 98824

This fact sheet addendum accompanies the permit which is being reauthorized to the City of George for the discharge of wastewater to irrigated cropland after treatment by UV disinfection. The previous fact sheet (attached) is also part of this administrative record and explains the basis for discharge limitations and conditions of the reauthorized permit.

The existing permit requirements including discharge limitations and monitoring do not need to be changed to protect the receiving water quality. The previous fact sheet addressed conditions and issues at the facility at the time when the previous permit was issued and statements made reflected the status in 1998. Since the issuance of the current permit, the Department has not received any information which indicates that environmental impacts from the discharge that were not evaluated at the time of the last permit issuance is persuasive enough to undertake a complete renewal of the permit and to further document the administrative record. This reauthorized permit is virtually identical to the previous permit issued on December 23, 1998.

Most of the discharge limits and conditions in effect at the time of expiration of the previous permit are carried over unchanged to this reauthorized permit. Assessment of compliance and inspections of the facility during the previous permit term by Jerry Anderson, facility manager, did not indicate that the facility should be placed on a high priority for permit renewal.

The reissuance of a wastewater discharge permit with essentially no changes from the previous permit is classified by the Department as a reauthorized permit. Facilities qualify on a case-by-case determination for a reauthorized permit based on the relatively low priority placed on the discharge and its potential to impact the environment when compared to other discharges that are due for permit reissuance. The Department places a high priority on permit renewals in situations where water quality would materially benefit from a more stringent permit during the next five-year cycle.

The permit reauthorization process, in concert with the routine renewal of high priority permits, allows the Department to reissue permits in a timely manner and minimize the number of active permits that have passed expiration dates. A system of ranking the relative significance of the environmental benefit to be gained by renewing a permit rather than reauthorizing a permit is followed during the Department's annual permit planning process.

Each permit that is due for reissuance is assessed by the permit manager who is familiar with the discharge and compared with other permits that are also due for reissuance. The public is notified and input is sought after the initial draft ranking has tentatively established which permits are likely to be completely renewed and which are likely to be reauthorized. All relevant comments and suggestions are considered before a final decision is made regarding the type of reissuance for each permit.

The only changes to the previous permit are to the submittal date requirements. Submittal requirements from the previous permit that were completed and submitted, and do not require additional or continued assessment were removed from this permit. These include flow meter installation, and primary cooling pond clay liner installation.

Other standard compliance and submittal requirements that have been carried over from the past permit into this reauthorized permit include the permit renewal application, discharge monitoring reports, and the irrigation and crop management plan. The submittal dates for these have been adjusted to the proposed permit schedule. These submittals were considered necessary by the Department in the previous permit and no information has come forward to cause a reconsideration of the submittal requirement.

Public notice of the availability of the reauthorized permit is not required (WAC 173-216) and will not be done because there have been no changes in the discharge limits and conditions since it was last public noticed and issued.

An application for permit reissuance was submitted to the Department on October 12, 2000 and accepted by the Department on October 16, 2000.

#### *RECOMMENDATION FOR PERMIT ISSUANCE*

The Department proposes that this permit be issued for five years.

#### **APPENDIX A--PUBLIC INVOLVEMENT INFORMATION**

The Department has determined to reauthorize a discharge permit to the applicant listed on page 1 of this fact sheet addendum. The permit contains conditions and effluent limitations that are described in the fact sheet.

A group public notice of application was published on August 9 and August 16, 2000 in the Columbia Basin Herald to inform the public that that Ecology would be making permit decisions on this permit for fiscal year 2001 and to invite comment on the reauthorization of the permit.

# FACT SHEET - AMENDMENT #1

## City of George

### I. GENERAL INFORMATION

Facility: City of George POTW  
P.O. Box 5277  
George, WA 98824

Facility Location: Approximately one mile north of the city of George, adjacent to the USBR West Canal (Grant County)

Type of Facility: Municipal sanitary wastewater treatment facility

Wastewater Treatment: Facultative lagoons, UV disinfection, land application

### II. BACKGROUND

The City of George is located in Grant County, along Interstate 90, approximately 10 miles south of Quincy, 30 miles west of Moses Lake and 120 miles southwest of Spokane. The city covers an area of about 325 acres and currently has a population of 465.

A new wastewater collection and treatment system was completed in November 1997. Wastewater is pumped from a central collection wet well in the city to a lined facultative lagoon system. After UV disinfection the water is spray irrigated onto a quarter center pivot sprayfield; 14.7 acres.

State waste discharge permit #8062 was issued to the city on December 23, 1998. The permit limits, in part, the daily maximum effluent flow to 0.200 MGD.

### III. PERMIT MODIFICATION

In a letter dated May 24, 1999, the city requested that the permit be modified to allow for a daily maximum effluent flow to be 0.275 MGD. This request was based on the lower than anticipated concentration of total nitrogen that has been determined in the effluent.

### IV. DISCUSSION

The 0.200 MGD maximum daily discharge limitation value was based on information given in the engineering report for the treatment facility; specifically the crop and

irrigation management plan section (pg. 9). For maximum economic yield at the sprayfield, an irrigation rate of at least 9.1 gpm is needed. This equates to approximately 0.200 MGD.

A review of the construction specification document for the irrigation pond/sprayfield system (EMCON, 1996) showed the following:

- an irrigation pump capacity of 0-200 gpm (288,000 gpd)
- UV disinfection system peak flow: 180 gpm (259,200 gpd)
- center pivot nozzled and factory designed for effluent distribution of 180 gpm.

The current state waste discharge permit regulation does not allow a discharge permit to authorize flows or waste loadings to exceed approved design criteria (WAC 173-216-110). Therefore, the highest maximum daily discharge value allowed from the city's treatment facility is 180 gpm or approximately 260,000 gpd.

## V. CONCLUSION

Based on the information presented in the construction specification document for the treatment system and the engineering report, Ecology agrees that the permit can be modified, but only to allow the daily maximum discharge to be 260,000 gpd, not the 275,000 gpd that was requested by the city. This change does not exceed the design criteria of the UV disinfection system or the spray irrigation system.

The following sections of the permit will be modified (attached):

1. Page one of the permit to show the "amended date"
2. Section S1 of the permit will be modified to authorize a daily maximum effluent flow of 260,000 gpd.

## VI. REFERENCES

EMCON, 1999. Specifications for Schedule I: New Collection System; Schedule II: New Treatment System. February.



**FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST- 8062**  
**CITY OF GEORGE WASTEWATER TREATMENT FACILITIES**

**SUMMARY**

Applicant: City of George

Facility Name  
and Address: City of George Wastewater Treatment Facilities  
P.O. Box 5277  
George, WA 98824

Type of  
Treatment: POTW; Facultative Treatment and Storage Lagoons followed by UV  
disinfection and discharge to irrigated cropland

POTW  
Location: Located in Farm Unit 108, Irrigation Block 78, Fourth Revision Columbia  
Basin project  
N½, Sec 31, T.19 N., R.24 E.W.M.

Latitude: 47° 06' 00"N  
Longitude: 119° 52' 00"W

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## INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No. ST-8062. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the State of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (RCW 90.48.080 and 90.48.162) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the State include procedures for issuing permits (Chapter 173-216 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish the basis for effluent limitations and other requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Eastern Office of the Washington State Department of Health and by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. Changes to the permit will be addressed in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	City of George
Facility Name and Address	City of George Wastewater Treatment Facilities
Type of Treatment System:	POTW; Facultative treatment lagoon and storage lagoon followed by UV disinfection and discharge to irrigated cropland
Discharge Location	Latitude: 47° 06' 00"N Longitude: 119° 52' 00"W.
Legal Description of Application Area	Approximately 15 acres located in N½, Sec.31, T.19 N., R.24 E.W.M Latitude: 47° 06' 00" N. Longitude: 119° 52' 00" W.
Contact at Facility	Name: Peter M. Smith, P.E., Public Works Director Telephone #: (509) 785-5081
Responsible Official	Name: Elliot Kooy Title: Mayor Address: P.O. Box 5277; George, WA 98824 Telephone #: (509) 785-5081 FAX # (509) 785-4880

## BACKGROUND INFORMATION

George is located in Grant County, along Interstate 90, approximately 10 miles south of Quincy, 30 miles west of Moses Lake and 120 miles southwest of Spokane. The City of George covers an area of about 325 acres and currently has a population of 465.

Topographically, George is located on flat terrain with little or no defined slope or drainage pattern. Man-made features such as the USBR irrigation canals to the east and south and the I-90 freeway to the north help define the limits of the community. George is located within the USBR Columbia Basin Reclamation Project and essentially surrounded by irrigated agriculture. Prior to the Columbia Basin Reclamation Project, the George town site was desert, with no trees or stream beds. There are no wetlands within the limits of the City.

## DESCRIPTION OF THE COLLECTION AND TREATMENT SYSTEM

The collection and treatment system were completed in November, 1997. The facility was built with a combination of grant and loan money from the Farmers Home Administration (FmHA). The system has been operational for approximately one year.

### COLLECTION SYSTEM STATUS

The collection system is divided into three major components. The first component consists of the gravity collection system. There are approximately 10,200 feet of 8" and approximately 8400 lineal feet of 10" PVC collection pipe in this part of the system. The second component consists of a single stretch of 900 feet of 4" PVC force main which serves the residences on Parkhill Drive. Sewage in this area flows westerly to a small lift station and then is pumped to the southern end of the gravity collection system.

The final component is the main lift station and 6000 lineal feet of 6" PVC force main which conveys the collected sewage to the treatment lagoons located north of I-90, approximately 1 mile north of the city limits.

### TREATMENT PROCESSES

The new treatment system replaced the system of private septic tanks with leachfields and cesspools that previously existed. All such systems within the city limits were either removed or filled in and disconnected.

The treatment system is located approx. one mile north of the city (Fig. 1) and is comprised of one 6 acre non-aerated treatment lagoon, a 4 acre winter storage lagoon and an ultraviolet disinfection (UV) system (Appendix C). The lagoons are constructed with a 40 mil HDPE synthetic liner. Spray application is limited to the period between May and October of each year.

Information on the design parameters for this system can be found in the May 12, 1995 Engineering report prepared for George by EMCON, Inc. The basic design parameters are:

Design Population	788
Average unit loading	80 gallons/capita/day
Average BOD loading	0.20 lbs/capita/day or 158 lbs/day
Effluent Fecal Coliform	≤200/100 ml
Irrigation Season	May-Oct with limited application during the months of March and April
Net annual evaporation	42 inches/year

#### DISTRIBUTION (SPRAYFIELD) SYSTEM

The irrigation system is designed to dispose of a total of about 23 million gallons of effluent annually, over the approximately 6 months of application. The irrigation system is comprised of a 450 foot radius center pivot irrigator that sprays approximately 14.7 acres of irrigated ground adjacent to the treatment and storage facilities (Appendix C). Effluent is retained in the storage lagoon from October to May of each year.

The land is owned by the city. However, they contract with a private individual for management of the site. The design of the system is based on an effluent gross discharge of 418.2 pounds of nitrogen per acre per year. This appears to be on the higher end of the design spectrum, and monitoring will be used to verify effluent, crop, soil and groundwater impacts.

The predominant surface soils at the site are identified as Burbank loamy fine sand, Ephrata fine sandy loam and Neppel fine sandy loam. These are all deep, well- to excessively-drained soils, on terraces, formed in gravelly glacial outwash mixed with eolian deposits in the upper soils. Specific site investigation by the engineer concluded that the site is underlain by unconsolidated soils at least 15-20 feet deep. Depth to groundwater encountered in the three monitoring wells was between 7.66 feet to 13.3 feet, an indication that proper wastewater management and monitoring are critical for the protection of groundwater.

#### RESIDUAL SOLIDS

The treatment facilities remove solids during the life of the system from the treatment and storage lagoons, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill. Solids removed from the lagoons will be land applied under a permit from the Grant County Health District.

#### GROUND WATER

The depth to groundwater, as discussed above, is very close to the surface. The relative groundwater elevations ranged between 7.66 feet to 13.3 feet below the surface. The groundwater contours developed by the engineer indicate a south-southwesterly flow direction and an approximate hydraulic gradient of 0.0002 ft/ft. Rising head slug test data conducted indicate that there was nearly instantaneous recovery in a period of 1-3 seconds in each well.

This indicates a high hydraulic conductivity. The location of the existing monitoring wells is delineated in the site map – Appendix C.

The chemical analysis of the groundwater samples indicate that alkalinity as  $\text{CaCO}_3$  ranges from 138-187 mg/l, chloride ranged from 6.3-11 mg/l, nitrate ranged from 0.8-1.6 mg/l, TKN ranged from 0.1-0.5 mg/l, orthophosphate ranged from 0.01-0.02 mg/l, and TDS ranged from 215-280 mg/l. These values give a good baseline for monitoring the impact of the irrigation on the groundwater.

#### *PERMIT STATUS*

An application for a permit was submitted to the Department on July 1, 1998 and accepted by the Department on August 3, 1998.

#### *SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT*

The facility last received a cursory inspection on May 5, 1998.

#### *WASTEWATER CHARACTERIZATION*

The concentration of pollutants in the discharge has not previously been reported. This permit will allow both Ecology and the city of George to determine the quality of its management of the wastewater system and help develop any modifications to irrigation practices if they are determined necessary.

#### *SEPA COMPLIANCE*

The FmHA prepared a Class 2 Environmental Assessment under NEPA for this project.

### **PROPOSED PERMIT LIMITATIONS**

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not pollute the waters of the State. The minimum requirements to demonstrate compliance with the AKART standard are derived from the *Design Criteria for Municipal Wastewater Land Treatment*, and Chapter 173-221 WAC.

The permit also includes limitations on the quantity and quality of the wastewater applied to the sprayfield that have been determined to protect the quality of the ground water. The approved engineering report includes specific design criteria for this facility.

#### *TECHNOLOGY-BASED EFFLUENT LIMITATIONS*

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110).

### *GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS*

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. Drinking water is the beneficial use generally requiring the highest quality of ground water. Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses.

Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

**Table 1: Ground Water Quality Criteria**

Total Coliform Bacteria	1 Colony/ 100 mL
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Sulfate	250 mg/L
Nitrate	10 mg/L
pH	6.5 to 8.5 standard units
Manganese	0.05 mg/L
Total Iron	0.3 mg/L
Toxics	No toxics in toxic amounts

Pollutant concentrations in the proposed discharge have the potential to exceed ground water quality criteria with technology-based controls, which the Department has determined to be AKART. Crop uptake and irrigation management are critical to insure that the shallow groundwater is not being degraded by the application. A limit based on ground water criteria is not being established at this time, but may be in the next permit cycle if the results of testing indicate that the groundwater beneath the application site is being adversely affected by the discharge.

### **MONITORING REQUIREMENTS**

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

#### *INFLUENT AND EFFLUENT MONITORING*

The monitoring and testing schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

### *CROP MONITORING*

The monitoring and testing schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the farming practices utilized, the necessary health of the crop and the cost of monitoring.

### *SOIL MONITORING*

The monitoring and testing schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the importance of monitoring nutrient migration through the soil, the quantity and variability of the discharge and cost of monitoring

### *GROUND WATER MONITORING*

The monitoring of ground water at the site is required in accordance with the Ground Water Quality Standards, Chapter 173-200 WAC. The Department has determined that this discharge has a potential to pollute the ground water. Therefore the Permittee is required to evaluate the impacts on ground water quality. Monitoring of the ground water at the site boundaries and within the site is an integral component of such an evaluation.

## **OTHER PERMIT CONDITIONS**

### *REPORTING AND RECORDKEEPING*

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-216-110).

### *FACILITY LOADING*

The design criteria for this treatment facility are taken from May 12, 1995 engineering report prepared by EMCON and are as follows:

Monthly average influent lagoon flow (max. month):	0.063 mgd
Instantaneous peak influent lagoon flow:	0.252 mgd
BOD influent lagoon loading:	158 lbs/day
Total Annual Wastewater Application	23 MG/year
Crop Production (alfalfa)	28 tons/acre/yr

The permit requires the Permittee to maintain adequate capacity to treat the flows and waste loading to the treatment plant (WAC 173-216-110[4]). The Permittee is required to submit an engineering report when the plant reaches 85% of its flow or loading capacity. For significant new discharges, the permit requires a new application and an engineering report (WAC 173-216-110[5]).



### *IRRIGATION AND CROP MANAGEMENT PLANS*

The irrigation and crop management plan is required to support the engineering report(s) and operations and maintenance manual. This plan shall include a consideration of wastewater application at agronomic rates and should describe and evaluate various irrigation controls.

### *OPERATIONS AND MAINTENANCE*

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

### *RESIDUAL SOLIDS HANDLING*

To prevent water pollution the Permittee is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the local health district.

### *PRETREATMENT*

WAC 173-216-110 requires that the list of prohibitions in WAC 173-216-060 be included in the permit.

### *GENERAL CONDITIONS*

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to submit written notice of significant increases in the amount or nature of discharges (typically new industrial discharges) into the sewer system tributary to the permitted facility. Condition G6 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G7 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Condition G8 requires application for permit renewal 180 days prior to the expiration of the permit. Condition G9 requires the payment of permit fees. Condition G10 describes the penalties for violating permit conditions.

## RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics. The Department proposes that the permit be issued with an expiration date of June 30, 2001.

The reason that this permit will not be issued for the standard five-year period is the Department's initiative to issue and manage discharge permits by watersheds. This permit is included in Ecology's mid-Columbia watershed which is due for all permits to be (re)issued in FY 2001. Issuing this permit with an expiration date of June 30, 2001 will put this permit into the proper watershed sequence.

To help reduce the cost of submitting a complete new permit application, Ecology can specify what parts of the application need to be completed. Unless there have been process modifications or changes in quality/quantity of the wastewater, minimal information should be required to complete the next application.

## REFERENCES FOR TEXT AND APPENDICES

Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.

Washington State University, November, 1981. Laboratory Procedures - Soil Testing Laboratory. 38 pp.

Washington State University, November, 1981. Laboratory Procedures - Soil Testing Laboratory. 38 pp.

EMCON, Predesign Report Proposed Sewerage System Town of George, May, 1995.

## APPENDICES

### APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to issue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on August 6 and August 13, 1998 in the Quincy Valley Post-Register to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on November 5, 1998 in the Quincy Valley Post Register to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator  
Department of Ecology  
Eastern Regional Office  
4601 N Monroe Street, Suite 202  
Spokane, WA 99205-1295

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (509) 456-6169, or by writing to the address listed above.

This permit was written by Andrew K. S. Tom, P.E.

## APPENDIX B--GLOSSARY

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Average Monthly Discharge Limitation**--The average of the measured values obtained over a calendar month's time.

**BOD<sub>5</sub>**--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD<sub>5</sub> is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Engineering Report**--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Fecal Coliform Bacteria**--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

**Grab Sample**--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

**pH**--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

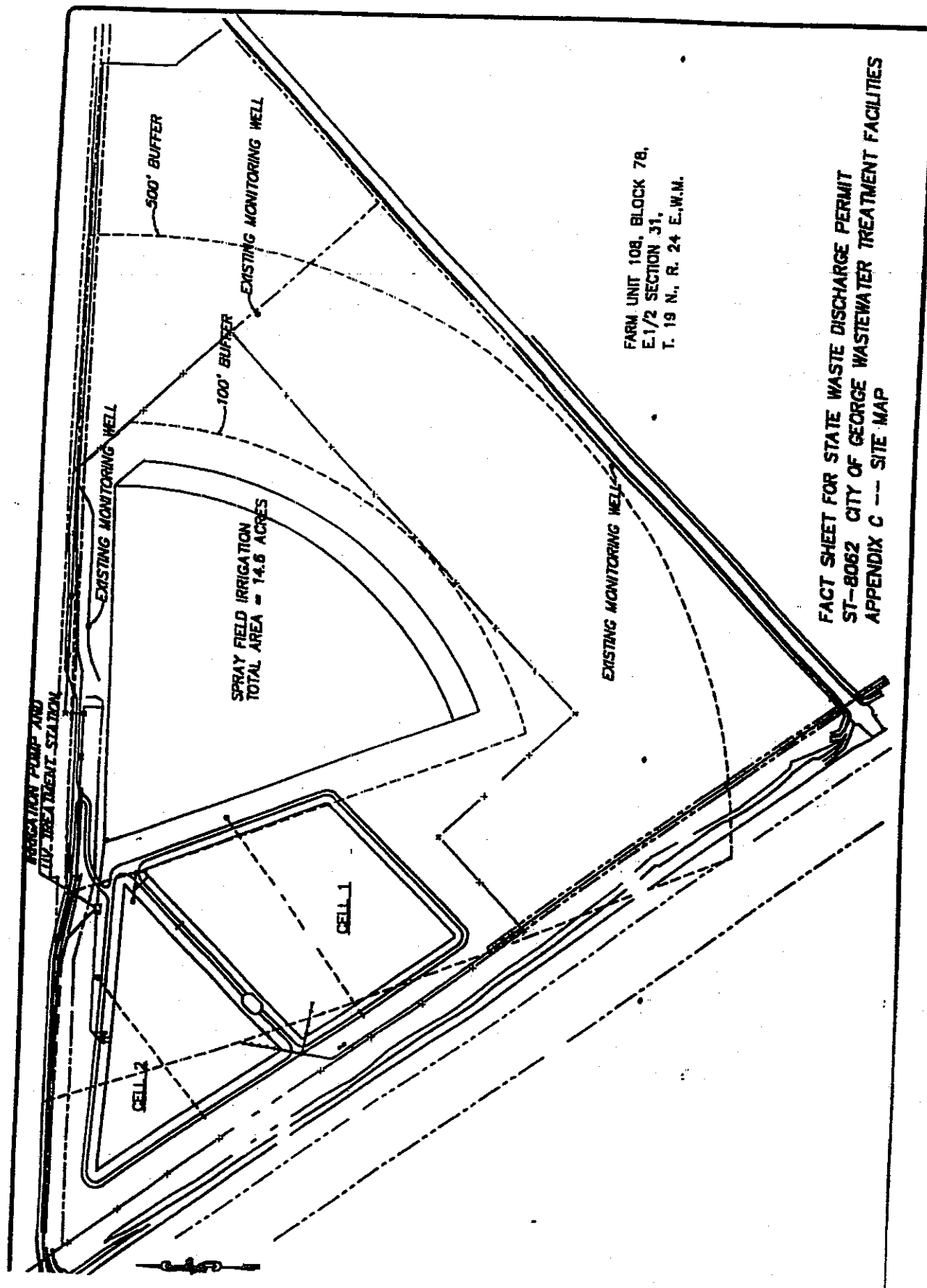
**Soil Scientist**--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

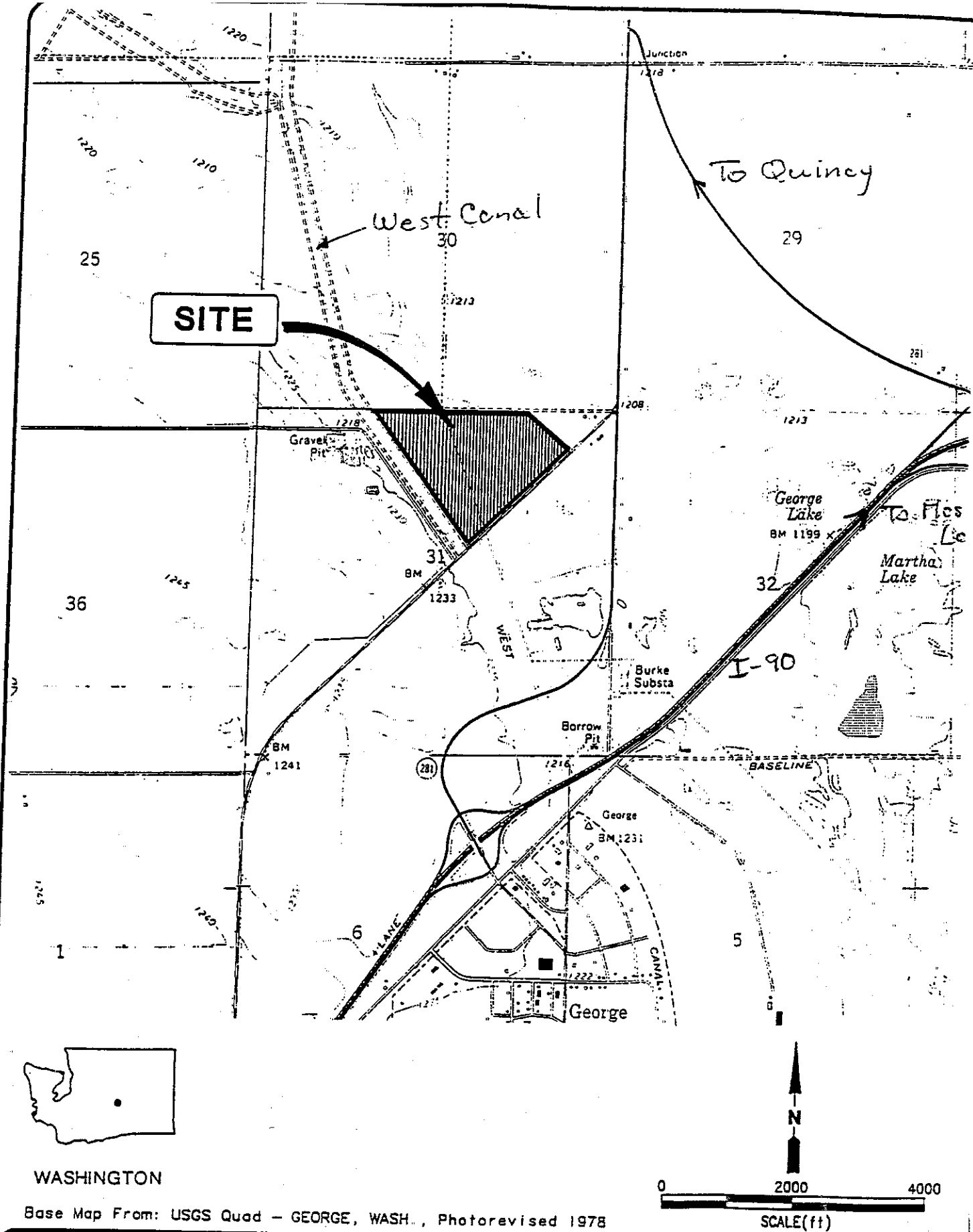
**State Waters**--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

**Water Quality-based Effluent Limit**--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

APPENDIX C—SITE MAP









#### APPENDIX D--RESPONSE TO COMMENTS

The city of George submitted comments on the draft permit in letters dated October 22, 1998 and November 30, 1998. A comment was also received from the Quincy-Columbia Basin Irrigation District in a letter dated December 3, 1998. The responses to the city's comments are given below in the order in which they were presented starting with the October letter. The response to the irrigation district follows the city's. Whenever possible, an attempt will be made to paraphrase the comment.

##### October comments:

1. Comment: Section S1, Discharge Permit Limitations; The city is concerned that the TDS discharge limit of 500 mg/L can not be met with the current lagoon system. Removal of TDS requires ultrafiltration and reverse osmosis. In addition, wastewater will be added at agronomic rates to prevent leaching to the ground water. It is requested that the TDS discharge limit be removed from the permit.

Response: The TDS limit was taken from the design salt loading information given in the engineering report. Ecology recognizes that the treatment of TDS by lagoon systems will be minimal, and that the sprayfield crops will provide some treatment.

Ecology agrees that the TDS limit should not be a discharge limit at this time. Ground water monitoring for TDS will be required to provide data to determine during the permit cycle if the sprayfields are impacting ground water.

The following changes will be made in Section S1:

Discharges shall be subject to the following limitations:

	EFFLUENT LIMITATIONS	
Parameter	Maximum Monthly <sup>a</sup>	Maximum Daily <sup>c</sup>
TDS	500 mg/L	N/A
Fecal Coliform	≤200/100 mL	≤200/100 mL
pH	Shall not be outside the range of 6 – 9 s.u.	

2. Comment: The city does not understand the need for influent testing for TKN, NO<sub>3</sub> and NH<sub>3</sub>. The nitrogen concentration is expected to be consistent since there are very few businesses and no industries. The lagoons will remove appreciable amounts of nitrogen. Nitrogen utilization will occur via the sprayfield. It is requested that influent nitrogen monitoring be eliminated.

Response: There is no proposed influent testing requirement for any nitrogen species.

3. Comment: The proposed sampling requirements in Section S2 require that automated 24hr composite samples of the influent be collected. The Plans and Spec's that were approved by Ecology, did not contain the requirement for a compositor. The installation of a compositor would be very costly. The composition of the wastewater is expected to be consistent with small communities and the design of the lagoons was conservative compared to Ecology guidelines. It is requested that the requirement for 24hr composite samples be eliminated from Section S2.

Response: Ecology recognizes the expense of buying and installing an automated composite sampler. Cost of testing is considered when testing schedules are placed in a permit. In addition, verbal information supplied by the city shows that a planned commercial addition to the collection system is no longer an issue.

It has been decided that the 24hr composite requirement for influent samples will be changed to an 8hr manual composite. Discrete grab samples for the composite will be collected at least every two hours.

Section S2.A will be changed accordingly:

Parameter	Units	Sample Point	Sampling Frequency	Sample Type
BOD <sub>5</sub>	mg/L, lbs/day	Influent sampling station	1/month	<del>24 hour</del> 8hr manual composite <sup>2</sup>

Footnote 2 shall be changed:

<sup>2</sup>The ~~twenty four hour~~ composite sample shall be composed of discrete grab samples collected ~~in an automatic composite sampler~~ at least every two hours.

4. Comment: Section S2.A requires quarterly monitoring of the effluent for several parameters. The soil report done for the engineering report recommends minimal sprayfield irrigation during March and October. It is requested that the quarterly effluent monitoring apply to the 2<sup>nd</sup> and 3<sup>rd</sup> quarters only.

Response: Ecology believes that the quarterly testing requirements for the parameters listed is the minimal testing that can be done for a new treatment system whose wastewater has not been fully characterized. It must be recognized that if there is no effluent sprayed onto the fields during any time of any quarter, then no effluent testing is required. As described in Section S3.A, if there is no discharge during any month, "No Discharge" should be written on the monthly report.

No changes will be made for the quarterly testing frequencies in Section S2.A.

5. Comment: Section S2.C requires intensive semi-annual soil monitoring at three depth increments. These requirements are significantly more substantial than those recommended in the soils report for the sprayfield. That report recommended only annual sampling to a depth of one foot. Since this report was done by a soil scientist as per Ecology guidelines, it is requested that the soil monitoring be replaced with that in the soils report. In addition it is requested that a specific month in the year be indicated for soil monitoring.

Response: Ecology believes that because of the shallow nature of the ground water and the fact that this is a new wastewater sprayfield system, soils monitoring is important to determine if nitrogen or TDS is accumulating in the soil with a potential for leaching. Since there has been no wastewater irrigation since the completion of the new facility and in an effort to establish baseline soil conditions to assess sprayfield management, the following soil testing frequency will be used: March 1999, November 1999, November 2000-2003. When the permit is reissued, the same monthly testing frequency can be used.

Section S2.C of the permit will be changed accordingly:

C. Soil Monitoring

1. Semi-Annual Monitoring

The Permittee shall perform soil monitoring for all of the test parameters on the irrigation lands ~~once per year at a time that is representative of conditions at the end of the crop growing season. Testing for all nitrogen parameters and conductivity shall be done twice per year, at times that are representative of conditions at the end and beginning of the crop growing season, according to the following schedule: March 1999; November 1999, November 2000, 2001, 2002 and 2003.~~

6. Comment: Section S2.E; please indicate which published technical references apply to the crop monitoring tests (e.g., dry tons/ac, chemical parameters, etc.)

Response: the crop testing in Section S2.E was derived from Ecology guidance for industrial wastewater land application systems (May 1993), and best professional judgement from information given in the sites' engineering report and soils report, and other municipal land application systems.

7. Comment: Section S4.A, Design Criteria; the city does not believe that fecal coliform should be an indication of plant design criteria or facility overloading. Effluent fecal coliform testing is a measure of the effectiveness of disinfection. A constant pumping rate through the UV disinfection system will insure consistent disinfection. It is requested that fecal testing be eliminated from the design criteria used to determine facility overloading.

Response: The fecal coliform value given in Section S4.A applies to effluent concentrations, not raw wastewater loading. The value of  $\leq 200/100$  mL for municipal land application systems is required as per Department of Health criteria for municipal land application systems.

To remove any confusion about this value the following change will be made in Section S4.A:

A. Design Criteria

Flows or waste loadings of the following design criteria for the permitted treatment facility shall not be exceeded:

Average influent flow for the maximum month:	63,000 GPD
Influent BOD <sub>5</sub> loading for maximum month:	158 lbs/day
<u>Effluent</u> Fecal Coliform (any sample)	≤200/100 mL
Total Annual Nitrogen discharge from the lagoons:	418.2 lbs/acre/year

8. Comment: Section S8, Irrigation and Crop Management Plan; this section requires that the plan be prepared by a soil scientists. The city is concerned about the annual cost of this requirement. It is believed that the information in the O&M manual and the soils report provides sufficient information for city staff to prepare this report. It is requested that the requirement for a soil scientist be eliminated.

Response: Ecology's guidance (May 1993) requires that a soil scientist must prepare all irrigation and crop plans. Each annual management plan is a compilation of the irrigation testing, soils and crop testing, and harvest information. It describes the nutrient and water balance for the field, impacts if any on the soils, and what changes if any that will be made in the management of the fields to reduce any leaching to the ground water. It is not meant to be a resubmittal of the inclusive soils report that was done for the engineering report.

The requirement in Section S8 for the irrigation and crop plan to be prepared by a soil scientist will not be changed.

Comments received in the November letter.

1. Comment: Section S1.A, Discharge Limitations: The city was made aware that the TDS effluent limit (500 mg/L) was taken from the sprayfield design report that was attached with the facility engineering report. The estimated TDS value in the report was used to estimate the leaching requirement for the sprayfields to prevent salt buildup. This number was never intended to represent the expected treatment performance of the lagoon.

Biological treatment systems can not reliably remove TDS. Based on treatment design references, TDS in lagoon effluent would be expected to exceed 500 mg/L. Soil and ground water monitoring should provide sufficient information to determine if the effluent is impacting TDS in the soils and ground water. Any buildup can be managed by changing the mixing ratio with supplemental irrigation water.

It is requested that the TDS discharge limit be eliminated.

Response: The change in S1 A has been done as previously explained.

2. Comment: Section S2, Monitoring requirements:

- The city wants to confirm that during periods when no lagoon effluent is applied to the sprayfield that no water quality testing shall be required for the lagoon influent or effluent

Response: When there is no effluent applied to the sprayfield during the entirety of any month, no effluent testing is required. A notation of this is required as per Section S3.A of the permit. However, all influent testing must be done regardless of whether or not effluent is being land applied.

- A manual composite sample will be acceptable in lieu of installing a composite sampler. The manual composite shall be done over an eight-hour period with samples taken approx. every 2 hours.

Response: This is acceptable and changes in Section S2.A have been made as previously described. The 8hr time frame shall be selected that best represents the characteristics of the wastewater.

- Please replace the term "Freshwater Flow" with "Supplemental Irrigation Water" in the first table of S2.A

Response: Agreed

- Please confirm that no water quality monitoring is required for the supplemental irrigation water.

Response: There is no supplemental irrigation water testing in the proposed permit. However, it is strongly recommended that a few samples each year be taken for nitrogen and TDS testing since the wastewater will not provide all of the water needs of the crop.

These test results would help the soil scientist in his/her preparation of nutrient budgets in the annual irrigation and crop plan. If the nutrient budget analysis indicates a need for this testing, Ecology can modify the permit to require periodic testing of the supplemental water.

- It is requested that the ground water monitoring be reduced to once/quarter after the first twelve monthly samples. Static water levels will continue to be monthly.

Response: Ecology agrees with this testing schedule over the next five year permit cycle.

The following changes will be made in S2.B:

Parameter	Units	Sampling Frequency	Sample Type
Static Water Level <sup>1</sup>	To the nearest 0.01 ft	1/month	measured

Parameter	Units	Sampling Frequency	Sample Type
Temperature <sup>1</sup>	° F	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
TDS	mg/L	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
Chloride	mg/L	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
Nitrate (as N)	mg/L	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
Fecal coliforms	#/100 ml	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
pH <sup>1</sup>	s.u.	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
Ferrous Iron <sup>1</sup>	Present/absent	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
<sup>1</sup> Field Test			
<sup>2</sup> 1/month testing shall be for the first 12 consecutive months after permit issuance			
<sup>3</sup> 4/year shall start after the first 12 consecutive months of testing results have been submitted. Testing shall done in: January, April, July, October			

- It is requested that soil testing be limited to once/yr after the harvest. A spring soil test will be taken during the first year (1999) of the permit.

Response: This has been agreed to and changes in Section S2.C have been made as discussed previously.

- The city is not aware of any published technical standards for the crop monitoring requirements. All testing will be conducted under the supervision of the soil scientist who will prepare the irrigation and crop plan. Please confirm that the primary objective of the crop testing is to perform a "mass balance" on the pollutants of interest. This and annual irrigation and crop plan is essentially a report that summarizes the water and pollutant balance on an annual basis.

Response: As explained in Section S2.G., all crop and soils testing shall be done by a lab accredited for similar parameters in water media. The irrigation and crop plan shall include the elements that are described in Section S8.A and B. In addition to the balances, any changes in the management of the fields shall be described (e.g., changes in crop rotation, changes in supplemental water mixing ratio, changes in any fertilizer additions, etc). This plan is not meant to be an annual resubmittal of the analysis that was done for the soils report in the engineering report.

3. Comment: Section S4.A, Facility Loading, Design Criteria; it is requested that fecal coliform be noted to be effluent only.

Response: This change in Section S4.A has been made as discussed previously.

4. Comment: Fact Sheet, Other Permit Conditions; under the Facility Loading section the value of 0.252 mgd is given for the "Instantaneous peak influent lagoon flow". The two influent pumps have a capacity of 390 gpm (0.56 mgd) each. The city wishes to state this for the record in the event future permits include an instantaneous peak design flow.

Response: The instantaneous flow value is taken from the final design loading values given in the engineering report. It is noted that the value given in the city's comment for the pumping capacity of the influent pumps is different than that in the engineering report; 100 gpm. It is suggested that the city consider providing Ecology with an addendum to the engineering report to show "as built" design criteria to insure all subsequent permits are based on accurate information.

#### Quincy-Columbia Basin Irrigation District

1. Comment: the district questions the Department's premise that wastewater from this proposed permit will be discharged into waters of the State. The underlying shallow ground water that's defined in the proposed permit has been artificially created by the irrigation of lands within the irrigation project and has previously been determined to be under the jurisdiction of the Federal Government, via Bureau of Reclamation. The district recommends that the Department seek permission from the Bureau for discharge prior to the granting of this permit.

Response: The state's Water Pollution Control law defines waters of the state to include "...underground waters... within the jurisdiction of the state of Washington"; RCW 90.48.020. The law also states that any discharge to waters of the state "...shall procure a permit from ...the department..."; RCW 90.48.160. The proposed discharge permit is being issued in accordance with the state's state waste discharge permit program (WAC 173-216) "...to maintain the highest possible standards to ensure the purity of all waters of the state and to require the use of all known, available and reasonable methods to prevent and control the discharge of wastes into the waters of the state."

The proposed permit authorizes discharges to ground water that is a water of the state and is therefore under the jurisdiction of the State of Washington. Ecology disagrees with the irrigation district's contention that the ground water is under the jurisdiction of the federal government (USBR).

